

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-20-1

Relating to Certification of New Heavy-Duty Off-Road Equipment Engines

HINO MOTORS, LTD

Pursuant to the authority vested in the Air Resources Board by Sections 43000.5, 43013 and 43018 of the Health and Safety Code; and,

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-45-9;

IT IS ORDERED AND RESOLVED: That the following Hino Motors, Ltd. 1997 model-year engine, with rated power between 175 and 750 horsepower, and exhaust emission control systems are certified as described below for use in heavy-duty off-road equipment:

Typical Equipment Usage: Excavator

Fuel Type: Diesel

<u>Engine Family</u>	<u>Liters</u>	<u>(Cubic Inches)</u>	<u>Exhaust Emission Control Systems and Special Features</u>
VHM6.7R6DARA	6.7	(411)	Turbocharger

Engine models and codes are listed on attachments. Production engines shall be in all material respects the same as those for which certification is granted.

The total hydrocarbons (THC), carbon monoxide (CO), nitrogen oxides (NOx), and particulate matter (PM) certification exhaust emission standards, in grams per brake horsepower-hour (g/bhp-hr), and the opacity of smoke emission standards, in percent (%), during acceleration (Accel), lugging (Lug), and peak (Peak) modes, for this engine family are (Title 13, California Code of Regulations, Section 2423):

<u>Exhaust Emissions (g/bhp-hp)</u>				<u>Smoke Opacity (%)</u>		
<u>THC</u>	<u>CO</u>	<u>NOx</u>	<u>PM</u>	<u>Accel</u>	<u>Lug</u>	<u>Peak</u>
1.0	8.5	6.9	0.4	20	15	50

The THC, CO, NOx and PM exhaust emission certification values, in g/bhp-hr, and the opacity of smoke emission certification values, in percent (%), for this engine family are:

<u>Exhaust Emissions (g/bhp-hr)</u>				<u>Smoke Opacity (%)</u>		
<u>THC</u>	<u>CO</u>	<u>NOx</u>	<u>PM</u>	<u>Accel</u>	<u>Lug</u>	<u>Peak</u>
0.4	0.8	5.9	0.3	18	4	42

BE IT FURTHER RESOLVED: That the listed engine models comply with the "Exhaust Emission Standards and Test Procedures--Heavy-Duty Off-Road Diesel Cycle Engines" (Title 13, California Code of Regulations, Section 2423) for the aforementioned model year.

BE IT FURTHER RESOLVED: That the listed engine models also comply with the "Emission Control Labels--1996 and Later Heavy-Duty Off-Road Diesel Cycle Engines" (Title 13, California Code of Regulations, Section 2424) for the aforementioned model year.

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has submitted the materials to demonstrate certification compliance with the Board's emission control system warranty provisions (Title 13, California Code of Regulations, Section 2425 et seq.).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

Executed at El Monte, California this 4th day of February 1997.

A handwritten signature in black ink, appearing to read "R. B. Summerfield", is written over the printed name and title.

R. B. Summerfield, Chief
Mobile Source Operations Division

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E.O.# ¹⁷⁻³ U-R-20-102.00.00 199 7 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET
HEAVY-DUTY OFF-ROAD DIESEL ENGINES

page 1 of 1

Manufacturer HINO MOTORS, LTD. Engine Family VHM6.7R6DARA
 Displacement: 6.728/411 Liters/Cubic Inches Eng Config: 1-6
 All Codes in Eng Fam: CA 49S 50S X Cert Test Procedures: ARB X EPA
 Valves/Ports per Cylinder 2/2 Stroke per Combustion cycle 4
 Maximum Rated Power: 189 HP (141 KW) @ 2150 RPM
 Ignition: Compression X Compression with Glow Plug Spark
 Fuel Type(S): Dedicated X Flex-Fuel Dual-Fuel Diesel X M100 M85
 CNG LNG LPG Other (specify)
 Diesel Cert Fuel: 40 CFR 86.1313-94 X Other (specify)
 Primary Service Equipment: hydraulic excavator
 Exhaust ECS (e.g., MFI, TC, CAC): TC

(use abbreviations per SAE J1930 JUN93)

Engine Model (Eng Code)	Rated HP @ RPM	Fuel Rate @ Rated HP mm3 / stroke (lbs/hr)	Fuel Pump & Injector Part No.	ECM/PCM Part No.	EGR Valve Part No.	PTOX / Catalytic Converter Part No.
AB-H07C-TD	189 @ 2150	98.0 (70.0)	Fuel Pump; ZEXEL Corp. 22020-5130 Injector; ZEXEL Corp. Nozzle & holder set; 23600-2710	—	—	—

Date Issued: October 25, 1996

Revisions:

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E.O.# U-R-20-102.00.00 1997 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET
HEAVY-DUTY OFF-ROAD DIESEL ENGINES

page 1 of 1

Manufacturer HINO MOTORS, LTD. Engine Family VHM6.7R6DARA
 Displacement: 6.728 / 411 Liters/Cubic Inches Eng Config: 1-6
 All Codes in Eng Fam: CA 49S 50S X Cert Test Procedures: ARB X EPA
 Valves/Ports per Cylinder 2 / 2 Stroke per Combustion cycle 4
 Maximum Rated Power: 178 HP (133 KW) @ 2100 RPM
 Ignition: Compression X Compression with Glow Plug Spark
 Fuel Type(S): Dedicated X Flex-Fuel Dual-Fuel Diesel X M100 M85
 CNG LNG LPG Other (specify)
 Diesel Cert Fuel: 40 CFR 86.1313-94 X Other (specify)
 Primary Service Equipment: hydraulic excavator
 Exhaust ECS (e.g., MFI, TC, CAC): TC
 (use abbreviations per SAE J1930 JUN93)

Engine Model (Eng Code)	Rated HP @ RPM	Fuel Rate @ Rated HP mm3 / stroke (lbs/hr)	Fuel Pump & Injector Part No.	ECM/PCM Part No.	EGR Valve Part No.	PTOX / Catalytic Converter Part No.
AA-H07C-TD	178 @ 2100	93.0 (64.8)	Fuel Pump; ZEXEL Corp. 22020-5120 Injector; ZEXEL Corp. Nozzle & holder set; 23600-2710	—	—	—

Date Issued: October 25, 1996

Revisions:

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